

## **Delta Independent Science Board Meeting January 15, 2015**

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***2<sup>nd</sup> Floor Conference Room, Park Tower  
980 Ninth Street, Sacramento, CA***

### **1. Welcome and Introductions**

The meeting was called to order at 9:00 a.m. January 15, 2015 by the Chair of the Delta Independent Science Board (Delta ISB or the Board), Tracy Collier.

Present: Steve Brandt, Tracy Collier, Jay Lund, Richard Norgaard, Vince Resh, John Wiens; and Brian Atwater, Liz Canuel, Harindra (Joe) Fernando and Judy Meyer (via telephone).

None of the Board members made any new disclosures.

Delta Science Program (DSP) staff in attendance: Lauren Hastings, Martina Koller, and Kelly Souza. USGS staff in attendance: Michelle Shouse and Jeff Kay.

### **2. Closed session: Discuss Lead Scientist recruitment. Not open to the public.**

### **3. Reconvene open session**

### **4. Delta Stewardship Council Chair's Report and Delta Stewardship Council Executive Officer's Report – Dan Ray on behalf of Randy Fiorini and Jessica Pearson**

Dan Ray reported the Delta Stewardship Council's (Council) Executive Officer, Jessica Pearson, will be back from leave on March 1, 2015. Ray covered a) the Governor's budget and its implications, b) a preview of the next Council meeting, and c) the Bay Delta Conservation Plan (BDCP).

Governor Brown released his proposed budget on January 8. A major initiative in the budget is the California Water Action Plan, which deals with issues statewide but focuses on the Delta. The CA Water Action Plan "embraces the Delta Plan and the Delta Science Plan". Some of the larger pieces call for restoration of tidal marshes, a levees strategy, and an update of flow criteria. The Governor's budget is built around the CA Water Action Plan and includes \$532 million in expenditures from Proposition 1 to implement the Water Action Plan. The budget has a heavy focus on the Delta and calls on other agencies to implement the Delta Science Plan. It calls for habitat restoration in the 6 opportunity areas. The budget provides \$6.7 million General Fund and \$2.6 million other funds for the Council to implement the Delta Science Plan, incorporate the BDCP into the Delta Plan, and coordinate federal approval of the Delta Plan. It includes general funds for the Delta ISB previously paid by the bond money. It also includes \$4 million of new general funds to support science investigation. This will provide funds for the

Science Action Agenda, proposal solicitation programs and the SeaGrant State Fellows program. It includes additional staff resources for grant management.

Other agencies in the Water Action Plan are also receiving funds from Governor's budget: \$83 million to various Conservancies for watershed projects, \$38 million to Wildlife Conservation Board to enhance stream flow projects, \$36 million to Department of Fish and Wildlife for in-Delta and non-Delta watershed restoration projects, \$130 million to the State Water Resources Control Board for wastewater treatment projects and safe drinking water projects, \$32 million to DWR for integrated regional water management and another \$23 million for water conservation. Ray predicts that we will witness lots of change over the next five years, in regards to substantial restoration activities and flow modifications.

Collier suggests an early summer agenda item to discuss how the Delta ISB review and recommendations about restoration are being incorporated into ongoing and newly resourced activities.

Lund asked if there was a pathway to getting a more accurate figure about what is needed in the Delta Science Program for research.

Ray informed the Board about the January 29, 2015 Delta Stewardship Council meeting where the Council will be presented with a Year in Review, a staff report on accomplishments during the 2014 year. Other topics the Council will hear about include an update on the BDCP, the Interagency Ecological Programs's Management, Analysis, and Synthesis Team Report, Delta Ecosystem Restoration Program's Annual Report and a Delta Levees Investment Strategy (DLIS) update.

DLIS staff will present their recommendations to Council members about the State's interests that Delta Levees need to protect. In March, a forum will bring together technical experts in levee and risk reduction, along with Council members, to receive input from the science and engineering experts. Consulting companies ARCADIS and ESA will be brought in to join the experts early in the process.

In regards to the BDCP review, Ray would like Council staff to work with the Delta ISB to identify the most important issues. Perhaps this is a revised Adaptive Management Strategy, more attention to the scientific underpinnings of tidal restoration, or the Decision Tree. Collier suggested that the Board hear from the BDCP proponents directly in order to maintain independence from Council staff.

## **5. Delta ISB Chair's Report**

Collier announced the next meetings will be on March 5-6, and April 9-10. Other meeting dates could not be established because many possible options fell on the same day as the IEP Coordinators meetings. A new doodle poll will be created will all the days in the week.

Collier announced that his term will be up in June 2015. Jay Lund will be the next Chair. The Board need to start thinking about who the next Chair-elect and set an election early in 2015. Voting should occur in March. All Board members' terms end in June 2015, except Brandt, Lund and Fernando. This is a good time to evaluate and think about the past five years, and reflect on what's working and what is not working. Collier will defer to the next Chair to organize a retrospect retreat as a future agenda item; perhaps planned together with a Delta field trip.

The vacant Delta ISB position has been posted on Council website:  
<http://deltacouncil.ca.gov/job-opportunities>. The position is 'open until filled' but applicants will not be considered until February 15, 2015.

## **6. Lead Scientist's Report**

Lead Scientist Peter Goodwin introduced new staff in the Delta Science Program. Each of them gave a short overview of their past experience and their future focus:

- Jiro Ariyama obtained his BS in Water and Soil Resources at University of Georgia researching efficient urea fertilizer use. After teaching and supervising graduation projects in hydrology and soil science at the Natural Resources Development College in Zambia, he obtained an MS in International Agricultural Development at UC Davis and is working on a MS in Hydrologic Sciences at UC Davis. His research at UC Davis is groundwater recharge modeling with nitrate transport. His current focus at the Council is on an adaptive management framework for water supply.
- Darcy Austin, comes from USGS where she worked as Chief of Communication on science synthesis and communication. She will continue to be the Executive Editor of *The State of the Bay-Delta Science 2016* report. She will also oversee the Adaptive Management and Delta ISB Support Unit.
- Maggie Christman, has a BS in Botany from the University of Georgia and a PhD in Plant Biology from UC Davis. After completing a post-doc at the University of Utah, she began working at a non-profit research institute in Davis, CA where she conducted research in vernal pools and other seasonal wetlands. That work involved assessing past restoration efforts as well as applying science-based methods to improve success of new restoration projects. At the Delta Science Program, she will be assisting with habitat restoration projects, including adaptive management and monitoring frameworks.
- Yumiko Henneberry has a PhD from UC Davis, where her research involved mercury and dissolved organic interactions in a wetland environment on Twitchell Island. Her scientific interest lies in Delta water quality. Future specific tasks are a bit under construction, but she will be getting involved in water quality issues in the Delta and also helping out with Interim Science Action Agenda and Science Action Agenda development.
- Hwaseong Jin completed an undergraduate degree in biology (Busan University, Korea) and graduate degrees in aquatic ecology (University of Alabama). His research focused on macroinvertebrate ecology, ecosystem ecology, and biological monitoring in various aquatic ecosystems. He will be working on water supply reliability.

- Kelly Souza worked in the Interagency Ecological Program for the last 15 years, since 2008 as the IEP Program Manager and prior to that as an Environmental Scientist in the Long-term Monitoring program responsible for tracking the relative abundance and distribution of young fishes in the San Francisco Estuary. She has a BS in Freshwater Fisheries. At the Delta Science Program, she will be utilizing her existing experience with IEP science activities to refine and expand existing efforts to develop a web-based tracking system that inventories monitoring, research, modeling, synthesis, peer-review, data management and other science activities. She will also be helping to support the Delta ISB.

Goodwin attended a conference The Western Consortium for Watershed Analysis, Visualization and Exploration (WC-WAVE) where amazing emerging technologies were presented such as 'skiing the watershed'.

Goodwin responded to Dan Ray's remarks on Governor's budget and Lund's comment about the amount of money needed for adequately funding research in this Delta. Goodwin noted that the Great Lakes is a successful example of where funding has been allocated commensurate to the scale of the problem. The 4 million in the Governor's budget is not adequate and right now science is at a low for funding. Gaps in research funding are very detrimental to the quality of science. Our access to those researchers who are soft-funded (e.g. in labs), will diminish as they start to look elsewhere for work. The Delta needs consistent funding strategy over longer periods of time, it needs to support comprehensive monitoring and reporting. It is critical to work collaboratively, and to get connected to national programs and opportunities.

The State of the Bay Delta Science (SBDS) is being updated, with Darcy Austin as the Executive Editor again. All the editors from the 2008 edition have been brought back to maintain continuity in the reports (Michael Healy, Peter Goodwin, Michael Dettinger and Richard Norgaard). The report is scheduled to be released at the State of the San Francisco Estuary Conference (<http://www.sfestuary.org/soe/>) on September 17-18, 2015. The Delta ISB will have an opportunity to conduct a review of the process later in the year. Chapter summaries and highlights will be available in summer. Norgaard is working with Sam Luoma to publish pieces of the SBDS in the San Francisco Estuary & Watershed Science. Goodwin is excited about the amount of innovation that is going into how the information will be communicated.

The December 2014 issue of the San Francisco Estuary and Watershed Sciences online journal has been released. There is an interesting article about thermal marking in otoliths, and Lund's paper about modeling found that seepage is a big issue and there's very little available data

The Science Program will be releasing the Data Summit White Paper later in the month. George Isaac and Rainer Hoenicke were an instrumental part of that effort.

An upcoming CABA seminar is scheduled for March 3, *Sturgeon in the Sacramento-San Joaquin Watershed. New insights to support conservation and management*. The free [symposium](#) will

be held at UC Davis Activities and Recreation Center (ARC), Ballroom A, from 9 a.m. to 4:00 p.m. and is open to the public. Presentations will be recorded, archived and made available afterwards.

The National Science Foundation will be hosting a two day seminar, "*Science: Becoming the Messenger*" in February (10<sup>th</sup> and 11<sup>th</sup>). The CWEMF (9<sup>th</sup> – 11<sup>th</sup>) Annual [Meeting](#), Salmonid Restoration [Conference](#) (11<sup>th</sup> -14<sup>th</sup>), and the Annual IEP [Workshop](#) (18<sup>th</sup> – 20<sup>th</sup>) are all coming up in March.

Rainer Hoenicke, the Science Program Deputy Director, augmented Goodwin's report with updates on the Delta Plan Interagency Implementation Committee (DPIIC) and the IEP Lead Scientist recruitment status. At the last DPIIC meeting in November, the Interim Science Action Agenda (ISAA) was presented. The DPIIC will establish workgroups to refine the ISAA and prepare scopes of work to request funding proposals and proposal solicitation notices. Goodwin will write letters to agency directors to suggest members for workgroups. Next DPIIC meeting is on May 11, 2015.

Recruitment for the Interagency Ecological Program (IEP) Lead Scientist position is still open. IEP wants to attract a mid-career, high-caliber researcher and offers a competitive salary. It is a civil service position. About 40 applications were received; however there is only a small pool (two) that fits state recruitment requirements. Interviews are expected in early March and will include interaction with Science Program staff, as well as others.

Atwater commented on the need to provide access to scientific journals and literature for agency staff.

## **7. Status Report on the Fish, Flows and Other Stressors Program Review**

Brandt gave a [presentation](#) on the status of the Fish and Flows program review. In response to the ISB's mandate to provide oversight of the scientific research, monitoring, and assessment programs that support adaptive management of the Delta through periodic reviews of each of those programs, the ISB is conducting reviews of thematic areas. The Fish and Flows program review is on the effects of water flow on Delta fish population in the context of other stressors. The primary purpose of the review is to improve the understanding, collaboration and communication about relationships between fishes, flows and other stressors.

The report is in draft status, the title has not been set. The process began in summer 2013 but went on a long hiatus while the Delta ISB was tasked with the BDCP review. The group conducted two sets of interviews with agency staff and stakeholders, reviewed published literature, reviewed a couple of agency reports, received presentations at Delta ISB meetings, attended key workshops and received comments from individual Board members in the most recent weeks. Jennifer Bigman, the SeaGrant State Fellow with the Science Program, was accepted into a PhD program and is no longer participating. One of the challenges of this topic is that it links the two coequal goals. It's all-encompassing and there is a lot of work already

done on flow. Brandt cited two other recent and relevant reports that were helpful in guiding their thoughts:

- [Workshop on Delta Outflows and Related Stressors Panel Summary Report](#), Reed et al., 2014.
- [Workshop on the Interior Delta Flows and Related Stressors Panel Summary Report](#), Monismith et al., 2014.

Other challenges are that the report deals with multiple stressors, an altered ecosystem, and important policy implications – and those things are all interrelated. What can the Delta ISB do in the context of what has already been done and what's in its purview and charge?

Findings: Overarching finding or recommendation is that there needs to be more investigation of causal mechanisms and a causal framework for doing research in order to foster better integration. Flows affect fish populations directly and indirectly in the context of multiple stressors, so correlation studies alone diminish in value over time. When you're dealing with flow you are really dealing with flows effect on abiotic and biotic factors and fish movement.

The subgroup is receiving comments today and they have a meeting scheduled tomorrow to go over reviews the comments they receive. Completion and a near-final form of the report is targeted for the March 5-6, 2015 meeting.

The subgroup would like to receive comments on the format of the report. How much of this should be a review of what is already known versus how much should be recommendations for future work?

Wiens commented that the review needs to end up being useful to agency managers so that they know how their resources might be directed in achieving better management. It needs to identify the gaps and the next steps about what to do to address those gaps. It shouldn't just be a review of the literature and it needs to be organized a little better.

Norgaard commented the report is not identifying how well the scientific community is poised to answer these questions and he doesn't see how report findings play back into the agency realm or how their recommendations are implemented at the agency level.

Wiens questioned what's good enough from a practical perspective? How much more information is needed in order to manage the relationship between flows and fish? From a scientific perspective, of course more data is better.

Lund identified two things that the subgroup learned through this process:

- 1) We've been learning a lot about fish and flows over the last decade.

- 2) We haven't always organized ourselves to provide the most applicability for the science agency managers to use.

Collier suggested the Delta ISB think about consistency in regards to what it wants to convey to agency folks via these themed review reports.

Public comments:

Val Conner prefaced her comments with the caveat that her comments are mostly from her Collaborative Adaptive Management Team (CAMT) perspective even though she currently works for the State and Federal Contractors Water Association.

- It is not clear who the target audience for this report is. Her suggestion is to partition the recommendations into groups for legislators or policy folks, funders, trench workers, scientists, managers, etc. At least be cognizant of all the groups.
- She encourages the Delta ISB to talk with CAMT as they are dealing with many of the same issues. What could be very helpful to the CAMT is if the Delta ISB comes across a radically different finding, highlight it. Don't just embed it in a report. The reviews and reports should build on each other rather than just being another review on the shelf.
- Large scale experiments – we are four years into a ten year adaptive management experiment (FLaSH) and we've only had one high flow event. We need to figure out what is happening for the next six years. If the Delta ISB is recommending moving away from large scale experiments, please help CAMT to understand what direction to move towards.

Lund responded to the public comment about 'target audiences.' This report is going to be of interest to many different audiences but Lund believes that perhaps none of them will read it unless there is a good post-release strategy for the report. It is the legislature that required these reviews, so they are definitely one audience. And it seems like the legislature is grouped into policy and funding sections. Then there is also an audience that consists of a scientific audience/trench workers /agency heads. Recommendations should be geared toward each one. Meyer suggests that DPIIC would be a good audience to target for these review recommendations since they also work through the Council and the Board reports to the Council too.

Brad Cavallo (Cramer Fish Sciences) expressed concern regarding the recommendation for the 3-D modeling. Cavallo commented that fish are not interacting with abstract flow metrics that we calculate, they are interacting with velocity. There is a lot we can learn from looking at instantaneous velocities or existing flow models such as the 1-D model, DSM2, and we don't see a lot of clarity from the fish community biologists about how these 3-D modeling data will be used. Cavallo suggested that if you use a 3-D model for the Delta you are not going to be learning anything new about the effects of export and inflows on instantaneous velocities.

Cavallo is keen on not disregarding other less-dimensional models or other information at hand, in favor of more modeling, when the linkages are not very strong to begin with.

Lund responded by suggesting that using a 1-D and a 3-D model together, you can better tell where things are the same and where they are different. A 1-D model alone can't tell you if it matters or not. Other Delta ISB members commented about other processes that they're investigating such as sea-level rise and flooding, which are 3 dimensional. They also commented that the report is not suggesting replacement of 1-D models with 3-D models.

Meyer hoped to by further along with the report by this time. There is a lot of good science out there, but she wants the report to be fresh and specific.

Lund concluded the discussion that the report still needs a concise introduction, comments on the effectiveness of the current administration and a list of promising directions for some of the controversial issues.

## **8. Update on Other Program Reviews**

### **i. Adaptive Management**

Wiens reported that there has been a 50% return rate for the nationwide adaptive management survey. The questionnaires that were returned are very detailed. Some people seem very keyed into funding issues, while others seem to focus on how hard it is to do full-scale adaptive management, regardless of what the legislature requires.

### **ii. Delta Levees & Delta as Place**

Norgaard and Atwater went on a tour and learned about how sanitary districts leverage levee investments. There was discussion about how well seepage can be detected. Although the information can be collected rapidly, it cannot be processed rapidly.

## **9. 2015 ISB Meeting Schedule**

**The next meetings are scheduled for March 5<sup>th</sup> and 6<sup>th</sup> and April 9<sup>th</sup> and 10<sup>th</sup>.** The group discussed the feasibility of keeping the Thursday/Friday combination in light of the fact that meetings can conflict with the standing meetings of the IEP Coordinators (first Thursday of each month) and the Delta Stewardship Council meetings. The decision was made to keep Thursday and Friday, to the extent possible although it may not always be the case. In the case of one-day meetings, the extra day has been useful for subsets to get together and work. All attempts will be made to notify the Delta ISB as soon as possible, when meetings are changed from two days to one day. Another field trip (levees?) with a half-day retreat and an in-Delta meeting is desired.

## **10. Delta ISB Workplan and Priorities for 2015**



In addition to the self-imposed reviews that the Board will want to undertake during 2015, Collier would like the Board to revisit their business plan and evaluate how they are doing (the introspection); the Council should also be asked for their feedback too. Hastings suggested that public comment could also be welcomed. Resh suggested starting to think about organizing the next set of reviews that will fall under the new Chair. Lund proposed the Board consider having a review about the drought and how California was affected by it, but this wouldn't make sense to do until the drought was over. The idea of a retreat was brought up again. It was decided to do it in conjunction with the spring field trip.

### **11. Meeting Outcomes**

Collier will give the Delta ISB report at the January 29, 2015 Council meeting. Collier will also prepare a list of 2015 priorities for the Board to finalize.

Adaptive Management team is meeting on January 16 on the 15<sup>th</sup> floor conference room at 9 am.

Fish and Flow team is having a teleconference on January 16, 2015 from 2 pm to 4 pm.

Norgaard, Lund and Atwater will suggest potential sites in the Delta for the ISB to visit during their in-Delta meeting.

The Board needs to nominate the next Chair Elect.

### **13. Public Comments**

There was no additional public comment.

### **Meeting Adjourned**